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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,668	12/27/2005	Yoav Bar-Yaakov	0-05-109	4122

42009 7590 10/15/2008

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EXAMINER

MCCULLEY, MEGAN CASSANDRA

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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10/15/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,668	Applicant(s) BAR-YAAKOV ET AL.	
	Examiner Megan McCulley	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 20-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 20-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

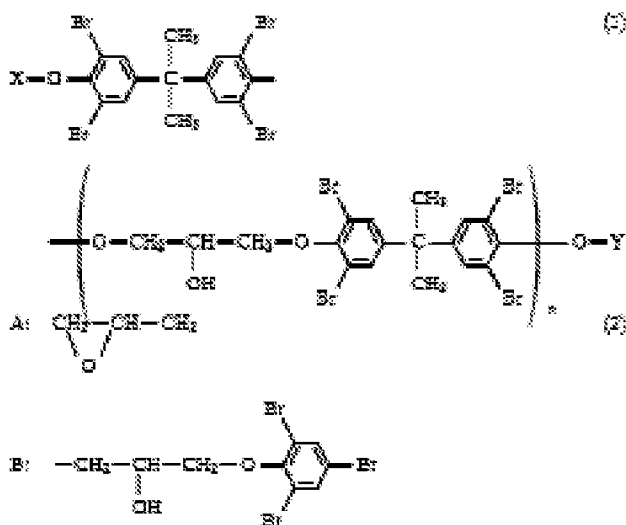
DETAILED ACTION

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. 5,837,799).

Regarding claims 1, 2 and 3: Chen et al. teaches a flame retardant for polymeric compositions (abstract) comprising a mixture of the molecules of the formula:



where X and Y can be group A or

group B (cols. 2 and 3), which is the instant formula (I) if X and Y are A, the instant formula (II) if X and Y are B, and the instant formula (III) if one of X or Y is A and the other is B. A mixture of these compounds is taught with 3.9% glycidyl end groups and 96.1% tribromophenyl-oxo-2-hydroxypropyl groups, which overlap the claimed ranges (Table 1 Reference example 4). This calculation is based on the amounts of disclosed

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X=Y=A, X=Y=B, and X=A, Y=B. Chen et al. also discloses a method of making the polymer which uses no solvent or tribromophenol (col. 4 lines 46-56), which would make a polymer with no solvent residue and no free tribromophenol residue.

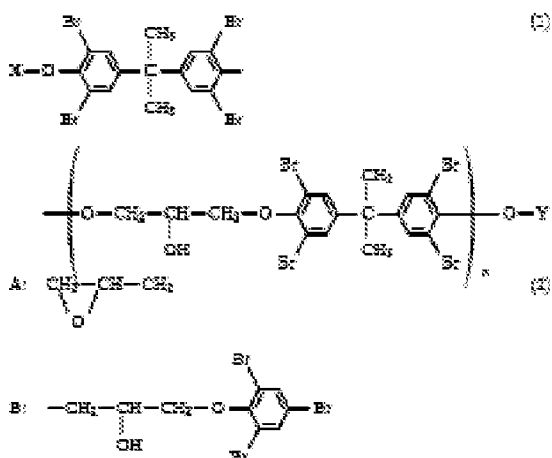
Regarding claim 4: In Reference example 4, the disclosed fire retardant X=Y=A corresponds to the claimed formula (I), X=A, Y=B corresponds to claimed formula (III) and X=Y=B corresponds to claimed formula (II) (see rejection of claim 1 above). There is 93.5% of formula (II)/X=Y=B, 5.2% of formula (III)/ X=A, Y=B, and 1.3% of formula (I)/X=Y=A, which overlaps the claimed ranges.

Regarding claims 5 and 6: Chen et al. discloses the formula shown above in the rejection of claim 1 with n =0-30 (col. 4 lines 57-63). With n =30, the calculated molecular weight of the fire retardant is 18,600 to 19,300 depending on the quantity of each end group. This overlaps the claimed ranges.

Regarding claims 7, 8 and 9: While Chen et al. does not directly teach that the acid number is less than 1 or 0.5 mg KOH/g or the epoxy equivalent is more than 10,000, since all of the components are present in the composition it is inherent that the composition would have these properties. If it is applicants' position that this would not be the case: (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

Claims 10 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. 5,837,799).

Regarding claim 10: Chen et al. teaches a flame retardant for polymeric compositions (abstract) comprising a mixture of the molecules of the formula:



where X and Y can be group A or group

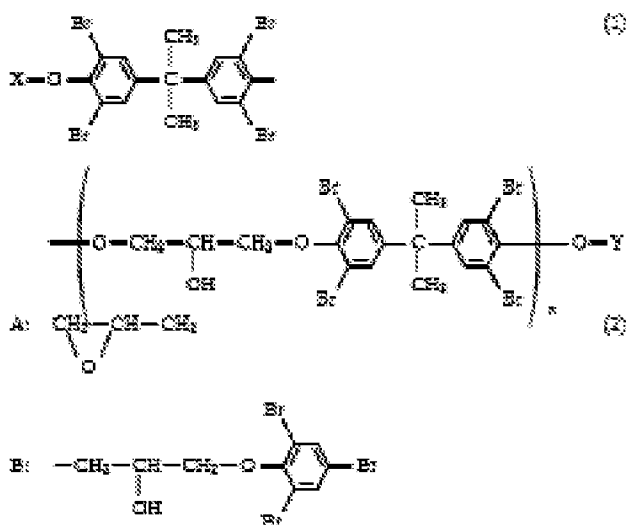
B (cols. 2 and 3), which is the instant formula (I) if X and Y are A, the instant formula (II) if X and Y are B, and the instant formula (III) if one of X or Y is A and the other is B. A mixture of these compounds is taught with 3.9% glycidyl end groups and 96.1% tribromophenyl-oxo-2-hydroxypropyl groups, which overlap the claimed ranges (Table 1 Reference example 4). This calculation is based on the amounts of disclosed X=Y=A, X=Y=B, and X=A, Y=B. Chen et al. also discloses a method of making the polymer which uses no solvent or tribromophenol (col. 4 lines 46-56), which would make a polymer with no solvent residue and no free tribromophenol residue. The composition also can comprise PET/polyethylene terephthalate, PBT/polybutylene terephthalate, polycarbonate resin or polyamide resin (col. 5 lines 7-15).

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Regarding claim 21: Also disclosed are filler, lubricant and pigments (col. 5 lines 22-27).

Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. 5,837,799).

Regarding claim 22: Chen et al. teaches a method for the preparation of the composition comprising a mixture of the molecules of the formula:



where X and Y can be group A or

group B (cols. 2 and 3), which is the instant formula (I) if X and Y are A, the instant formula (II) if X and Y are B, and the instant formula (III) if one of X or Y is A and the other is B. A mixture of these compounds is taught with 3.9% glycidyl end groups and 96.1% tribromophenyl-oxo-2-hydroxypropyl groups, which overlap the claimed ranges (Table 1 Reference example 4). This calculation is based on the amounts of disclosed $X=Y=A$, $X=Y=B$, and $X=A$, $Y=B$. Chen et al. also discloses a method of making the

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polymer which uses no solvent or tribromophenol (col. 4 lines 46-56), which would make a polymer with no solvent residue and no free tribromophenol residue.

The method comprises the steps of reacting low molecular weight brominated epoxide/tetrabromo bisphenol A type epoxy resin with tetrabromobisphenol-A/TBA and tribromophenol/TBP in the presence of a catalyst (col. 3 lines 48-52) or with tribromophenyglycidyl ether (col. 4 lines 46-56).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. Pat. 5,837,799) as applied to claim 10 above in view of Chisholm et al. (US 2001/0009944).

Regarding claim 20: Chen et al. sets forth the basic claimed composition as set forth above. Not disclosed is a hindered phenol antioxidant. However, Chisholm et al. teaches a polyethylene terephthalate or polybutylene terephthalate (para. 31) based resin comprising brominated polyepoxide flame retardants (para. 47) with a hindered phenol antioxidant (Table 1). Chen et al. and Chisholm et al. are combinable because they are both concerned with the same field of endeavor, namely brominated epoxy flame retardants in PET or PBT resin compositions. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine the

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hindered phenol antioxidant of Chisholm et al. with the composition of Chen et al. and would have been motivated to do so for such desirable properties as radical chain transfer inhibition.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. Pat. 5,837,799) as applied to claim 22 above when taken with Nantaku et al. (JP 2001-310990). Citations to the Japanese document refer to the English translation of the document.

Regarding claim 23: Chen et al. teaches the basic claimed method as set forth above. Also, no solvent is listed by Chen et al. Not disclosed is the temperature of the reaction being between 100 and 250 °C. However, the experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. See *In re Aller*, 105 USPQ 233 and MPEP 2144.05. At the time of the invention a person having ordinary skill in the art would have found it obvious to optimize the temperature of reaction and would have been motivated to do so for such desirable properties as reducing generation of corrosive gas as evidenced by Nantaku et al. (pg. 3 para. 6). A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. See *In re Boesch and Slaney*, 205 USPQ 215.

Response to Arguments

Applicant's arguments filed March 17, 2008 have been fully considered but they are not persuasive, because:

A) Applicant's argument that Chen et al. does not teach a high molecular weight polymer is not persuasive. The terms "high molecular weight" and "low molecular weight" are relative. As discussed in the rejection above and in point C below, the claimed molecular weight range is disclosed.

B) Applicant's argument that the low volatile content (concentration of free tribromophenol and solvent) is not disclosed by Chen et al. is not persuasive. In the methods disclosed by Chen et al. for making the flame retardant, the third method uses no solvent (col. 3 lines 48-52) even though it is directly stated that solvent is used in the first two methods. Further in the fifth method (col. 4 lines 46-56), no solvent and no tribromophenol is used to make the flame retardant. Therefore, at least using this method, no solvent or free tribromophenol would be in the composition. Further, T-62 is just one example of the many fire retardants of the disclosure so it is not germane if this particular fire retardant contains the volatiles. Further, no actual showing is provided that this fire retardant contains these volatiles, only allegations that it does.

C) Applicant's argument that the molecular weight is not explicitly disclosed is not persuasive. A person having ordinary skill in the art would be able to calculate the molecular weight range of the polymers based on the degree of polymerization, and once the calculation is done would find a range of 600-18,600 Daltons, which overlaps the claimed range.

D) Applicant's argument that the polymer of Chen et al. is only partly end capped is not persuasive and is mere allegation since no evidence is provided that this is the case. The amount of end capping is explicitly stated in the patent, such as in example 4, which overlaps the instant claimed amount of end capping as shown in the rejection above.

E) Applicant's argument that the fire retardant of Chen et al. would not have the claimed acid numbers and epoxy equivalent is not persuasive and only an allegation since no evidence is provided that this is the case. As to the phenols possibly being present, which would raise the acid number, the fifth method (col. 4 lines 46-56) does not employ tribromophenol, so none would be residual. The amount of end capping the tetrabromobisphenol A is the same as the claimed amount, so this would not add any more to the acid number than the instant. As for the epoxy equivalent, the claimed molecular weight of the polymer and amount of glycidyl groups claimed are disclosed, so the epoxy equivalent weight would inherently be the same since these are the only variables used to calculate epoxy equivalent.

F) Applicant's argument that Chen et al. does not disclose combining the fire retardant and polyethylene terephthalate, polybutylene terephthalate, polyamides or polycarbonate is not persuasive. Chen et al. teaches the fire retardant can be added to polyethylene terephthalate, polybutylene terephthalate, polyamide resins or polycarbonate resins. See col. 5 lines 7-15 and col. 1 lines 41-46.

G) Applicant's argument that Nantaku et al. does not recognize the advantage of highly end capped product is not persuasive and not germane since Chen et al. teaches this aspect and low volatile compounds.

H) Applicant's argument that the importance of end capping, importance of high molecular weight, and importance of low volatiles is not disclosed is not persuasive and not germane since the specific amount of end capping, specific molecular weight and no volatiles are disclosed as discussed above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Megan McCulley whose telephone number is (571)270-3292. The examiner can normally be reached on Monday - Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo, Ph.D./
Supervisory Patent Examiner, Art Unit 1796

/M. M./
Examiner, Art Unit 1796